

JIG AND FIXTURE DESIGN

CHAPTER I PRINCIPLES OF JIG DESIGN

Jigs and fixtures may be defined as devices used in the manufacture of duplicate parts of machines and intended to make possible interchangeable work at a reduced cost, as compared with the cost of producing each machine detail individually. Jigs and fixtures serve the purpose of holding and properly locating a piece of work while machined, and are provided with necessary appliances for guiding, supporting, setting, and gaging the tools in such a manner that all the work produced in the same jig or fixture will be alike in all respects, even with the employment of unskilled labor. When using the expression "alike," it implies, of course, simply that the pieces will be near enough alike for the purposes for which the work being machined is intended. Thus, for certain classes of work, wider limits of variation will be permissible without affecting the proper use of the piece machined, while in other cases the limits of variation will be so small as to make the expression "perfectly alike" literally true.

Objects of Jigs and Fixtures. — The main object of using jigs and fixtures is the reduction of the cost of machines or machine details made in great numbers. This reduction of cost is obtained in consequence of the increased rapidity with which the machines may be built and the employment of cheaper labor, which is possible when using tools for interchangeable manufacturing. Another object, not less important, is the accuracy with which the work can be produced, making it possible to assemble the pieces produced in jigs without any great amount of fitting in the assembling department, thus also effecting a great saving in this respect. The use of jigs and fixtures practically does away with the fitting, as this expression was understood in the old-time shop; it eliminates cut-and-try methods, and does